



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY
APPLICATION #: OSP - 0024

OSHPD Special Seismic Certification Preapproval (OSP)

Type: [] New [X] Renewal

Manufacturer Information

Manufacturer: Russelectric, Inc.

Manufacturer's Technical Representative: Elizabeth Stark

Mailing Address: South Shore Park, Hingham, MA 02043

Telephone: 781-749-6000 Email: estark@russelectric.com

Product Information

Product Name: Russelectric Switchgear Systems

Product Type: Low & Medium Voltage Switchgear

Product Model Number: See Certified Product List Table 1
(List all unique product identification numbers and/or part numbers)

General Description: Russelectric low and medium voltage switchgear provides low and medium voltage circuit
protection.

Mounting Description: Rigid floor mounted

Applicant Information

Applicant Company Name: W.E. Gundy & Associates, Inc.

Contact Person: Travis Soppe

Mailing Address: 1199 Shoreline Drive, Suite 310, Boise Idaho 83702

Telephone: 208-342-5989 Ext.115 Email: tsoppe@wegai.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in
accordance with the California Administrative Code, 2016.

Signature of Applicant: [Handwritten Signature] Date: 02/28/2019

Title: President Company Name: W.E. Gundy & Associates, Inc.

Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: W.E. Gundy & Associates, Inc.

Name: Travis Soppe, SE California License Number: S6115

Mailing Address: 1199 Shoreline Dr, Ste 310, Boise, ID 83702

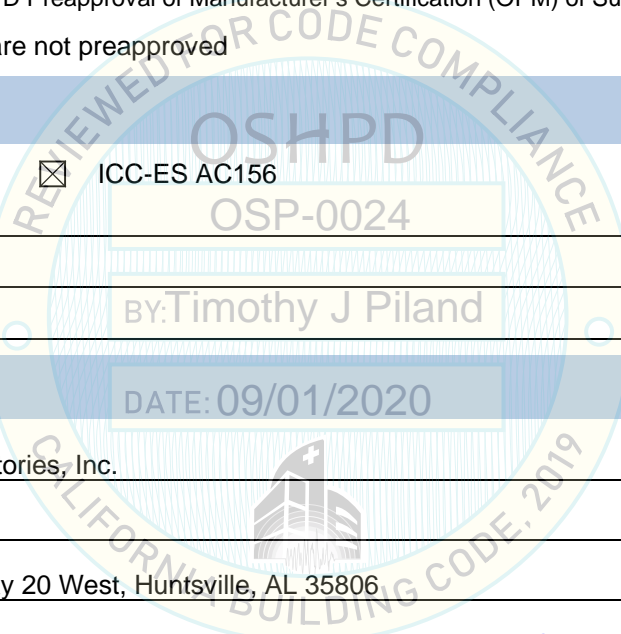
Telephone: (208) 342-5898 Ext. 115 Email: tsoppe@wegai.com

Supports and Attachments Preapproval

- Supports and attachments are preapproved under OPM- _____
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- Supports and attachments are not preapproved

Certification Method

- Testing in accordance with: ICC-ES AC156
- Other (Please Specify): _____



Testing Laboratory

Company Name: Wyle Laboratories, Inc.

Contact Name: Don Smith

Mailing Address: 7800 Highway 20 West, Huntsville, AL 35806

Telephone: 256-837-4411 Email: Don.smith@wyle.com

Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs





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FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: [X] Yes [] No

Design Basis of Equipment or Components (Fp/Wp) = 1.5 (LV), 1.34 (MV), 0.86 (MV - NEMA 3R)

Sds (Design spectral response acceleration at short period, g) = 2.00 (LV), 1.78 (MV), 1.15 (MV - NEMA 3R)

ap (In-structure equipment or component amplification factor) = 2.5

Rp (Equipment or component response modification factor) = 6.0

Omega_0 (System overstrength factor) = 2.0

Ip (Importance factor) = 1.5

z/h (Height factor ratio) = 1

Equipment or Component Natural Frequencies (Hz) = See Attachments

Overall dimensions and weight (or range thereof) = See Attachments

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: [] Yes [X] No

Design Basis of Equipment or Components (V/W) =

Sds (Design spectral response acceleration at short period, g) =

Sd1 (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) =

Omega_0 (System overstrength factor) =

Cd (Deflection amplification factor) =

Ip (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component Natural Frequencies (Hz) =

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2015: [] Yes [X] No

List of Attachments Supporting Special Seismic Certification

[X] Test Report(s) [] Drawings [] Calculations [X] Manufacturer's Catalog

[X] Other(s) (Please Specify): Certified Product Matrix, UUT Summary Sheets, Subcomponent Certification Letter

OSHPD Approval (For Office Use Only) - Approval Expires on December 31, 2025

Signature: [Signature] Date: September 1, 2020

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: Sds (g) = See Above z/h = See Above

Condition of Approval (if applicable):



RUSSELECTRIC INC. LOW VOLTAGE SWITCHGEAR CERTIFIED PRODUCT LINE MATRIX



Identification ²⁾	Cubicle Arrangement	NEMA	Width (in)	Depth (in)	Height (in)	Max CG (in)	Weight (lbs)	Representative UUT ¹⁾
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Table 1: Low Voltage Switchgear Product Line - $S_{DS} = 2.0$ at $z/h = 1.0$

LVSG-C	Electrical and Controls	1	26-36	28	90-98	54	950-1400	Interpolated
LVSG-C	Electrical and Controls	1	26	28	90	54	950	UUT_w-2b
LVSG-C	Electrical and Controls	1	30	28	90	54	1100	UUT_w-2a
LVSG-C	Electrical and Controls	1	30	72	90	60	1500	UUT_w-1b
LVSG-C	Electrical and Controls	1	24-42	72-78	90-98	60	1100-1700	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	24-48	72-78	90-98	57	1500	Interpolated
LVSG-1H	(1) 800A Breaker	1	26	78	98	46	1650	UUT_x-2b
LVSG-2H	(2) 800A to 5000A Breakers	1	24-36	72-78	90-98	57	1700	Interpolated
LVSG-2H	(1) 800A, (1) 3200A Breakers	1	24	78	98	48	1900	UUT_x-1a
LVSG-1H	(1) 800A to 5000A Breakers	1	24-28	72-78	90-98	49	2000	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	30-48	72-78	90-98	57	2000	Interpolated
LVSG-2H	(2) 800A to 5000A Breakers	1	24-26	72-78	90-98	49	2000	Interpolated
LVSG-2H	(2) 800A to 5000A Breakers	1	28-36	72-78	90-98	57	2000	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	24-26	72-78	90-98	49	2000	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	28-36	72-78	90-98	57	2000	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	24-28	72-78	90-98	46	2200	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	30-36	72-78	90-98	57	2200	Interpolated
LVSG-4H	(4) 2000A Breakers	1	24	72	90	48	2200	UUT_w-1a
LVSG-2H	(2) 800A to 5000A Breakers	1	24-26	72-78	90-98	42	2350	Interpolated
LVSG-2H	(2) 800A to 5000A Breakers	1	28-32	72-78	90-98	49	2350	Interpolated
LVSG-2H	(2) 800A to 5000A Breakers	1	34-36	72-78	90-98	57	2350	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	24-28	72-78	90-98	40	2500	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	30-34	72-78	90-98	49	2500	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	36-48	72-78	90-98	57	2500	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	24-26	72-78	90-98	40	2500	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	28-32	72-78	90-98	47	2500	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	34-36	72-78	90-98	56	2500	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	24-26	72-78	90-98	38	2600	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	28-32	72-78	90-98	45	2600	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	34-36	72-78	90-98	54	2600	Interpolated
LVSG-2H	(1) 800A, (1) 3200A Breakers	1	36	78	98	48	2600	UUT_x-2a
LVSG-2H	(2) 800A to 5000A Breakers	1	24-26	72-78	90-98	37	2700	Interpolated
LVSG-2H	(2) 800A to 5000A Breakers	1	28-32	72-78	90-98	43	2700	Interpolated
LVSG-2H	(2) 800A to 5000A Breakers	1	34-36	72-78	90-98	52	2700	Interpolated

General Notes:

All seismically certified configurations consist of a minimum of 2 ganged sections.

All low voltage switchgear are constructed of 12ga, Carbon Steel

¹⁾ _w and _x indicates the test report in which the units were qualified under: _w - T53994 and _x - T59065

²⁾ LVSG-C, 1H, 2H, 3H, 4H configuration are identified the figure at the end of the table.

RUSSELECTRIC INC. LOW VOLTAGE SWITCHGEAR CERTIFIED PRODUCT LINE MATRIX



Identification ²⁾	Cubicle Arrangement	NEMA	Width (in)	Depth (in)	Height (in)	Max CG (in)	Weight (lbs)	Representative UUT ¹⁾
LVSG-1H	(1) 4000A Breaker	1	36	72	90	44	2700	UUT_w-1c
LVSG-4H	(4) 800A to 2000A Breakers	1	24-26	72-78	90-98	34	2900	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	28-32	72-78	90-98	40	2900	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	34-36	72-78	90-98	48	2900	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	24-28	72-78	90-98	33	3000	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	30-34	72-78	90-98	42	3000	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	36-40	72-78	90-98	49	3000	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	42-48	72-78	90-98	57	3000	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	24-26	72-78	90-98	33	3000	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	28-32	72-78	90-98	39	3000	Interpolated
LVSG-3H	(3) 800A to 3200A Breakers	1	34-36	72-78	90-98	47	3000	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	24-28	72-78	90-98	31	3200	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	30-34	72-78	90-98	39	3200	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	36-40	72-78	90-98	18	3200	Interpolated
LVSG-1H	(1) 800A to 5000A Breakers	1	42-48	72-78	90-98	54	3200	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	24-26	72-78	90-98	31	3200	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	28-32	72-78	90-98	36	3200	Interpolated
LVSG-4H	(4) 800A to 2000A Breakers	1	34-36	72-78	90-98	44	3200	Interpolated
LVSG-1H	(1) 5000A Breaker	1	44	78	98	40	3200	UUT_x-1b

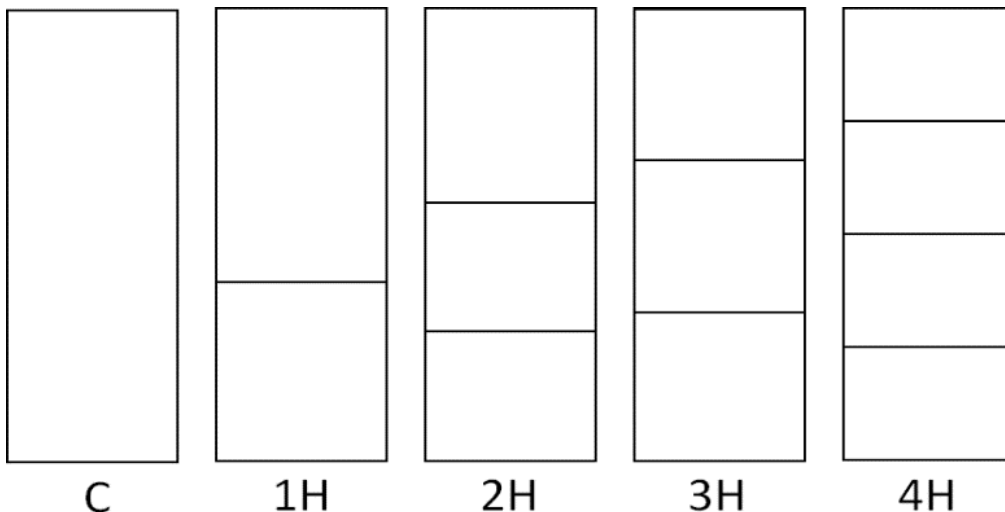
General Notes:

All seismically certified configurations consist of a minimum of 2 ganged sections.

All low voltage switchgear are constructed of 12ga, Carbon Steel

¹⁾ _w and _x indicates the test report in which the units were qualified under: _w - T53994 and _x - T59065

²⁾ LVSG-C, 1H, 2H, 3H, 4H configuration are identified the figure below.



**RUSSELECTRIC INC. LOW VOLTAGE SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRICES**



ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT ¹⁾
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Table 2: Circuit Breakers & Cradle - $S_{DS} = 2.0$ at $z/h = 1.0$

NW08N1, NW08H1 - H3	Square D	Masterpact NW 800A	280	Extrapolated
NW16N1, NW16H1 - H3	Square D	Masterpact NW 1600A	320	Extrapolated
NW20L1	Square D	Masterpact NW 2000A	380	UUT _w -1a
NW20H1 - H3 & L1	Square D	Masterpact NW 2000A	300-380	Interpolated
NW32H1 - H3 & L1	Square D	Masterpact NW 3200A	400	Interpolated
NW40H1 - H3	Square D	Masterpact NW 4000A	400	Interpolated
NW40H3	Square D	Masterpact NW 4000A	400	UUT _w -1c
MDS-C08	Eaton / Cutler Hammer	Magnum DS 800A	200	UUT _x -1a, 2a, 2b
MDS-C16	Eaton / Cutler Hammer	Magnum DS 1600A	200	Interpolated
MDS-C20	Eaton / Cutler Hammer	Magnum DS 2000A	220	Interpolated
MDS-C32	Eaton / Cutler Hammer	Magnum DS 3200A	260	UUT _x -1a, 2a
MDS-C40	Eaton / Cutler Hammer	Magnum DS 4000A	400	Interpolated
MDS-C50	Eaton / Cutler Hammer	Magnum DS 5000A	450	UUT _x -1b

Table 3: Current Transformers - $S_{DS} = 2.0$ at $z/h = 1.0$

120-202	ITI	C.T., 600V 2000:5	12	UUT _w -1a, UUT _x -2b
120-201 to 120-402	ITI	C.T., 600V 200:5 to 4000:5	12	Interpolated
130-201 to 120-402	IFI	C.T., 600V 200:5 to 4000:5	18	Interpolated
140-402	ITI	C.T., 600V 4000:5	22	UUT _w -1c, UUT _x -1b
140-500 to 120-602	ITI	C.T., 600V 50:5 to 6000:5	22	Extrapolated

Table 4: Display Lights & Flat Panel Displays - $S_{DS} = 2.0$ at $z/h = 1.0$

C-TPC1770H	Wonderware	LCD PC 17"	37	UUT _w -1b, UUT _x -1b
304-191000	Strongarm	Display Panel 19.1"	43	UUT _w -2a

Table 5: Transformers - $S_{DS} = 2.0$ at $z/h = 1.0$

K1000D1	Square D	Transformer 1000VA	21	UUT _w -1b, UUT _x -1b
K300D1	Square D	Transformer 300VA	8	UUT _w -1c, UUT _x -2b

Table 6: Protective Relays & Other Protection System - $S_{DS} = 2.0$ at $z/h = 1.0$

SR 489	GE Mutilin	Generator Protection System	17	UUT _w -1b, UUT _x -2a
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General Notes:

¹⁾ _w and _x indicates the test report in which the units were qualified under: _w - T53994 and _x - T59065

RUSSELECTRIC INC. MEDIUM VOLTAGE SWITCHGEAR CERTIFIED PRODUCT LINE MATRIX



Identification	Cubicle Arrangement ³⁾	NEMA	Width (in)	Depth (in)	Height (in)	Max CG ⁴⁾ (in)	Weight (lbs)	Representative UUT ¹⁾
Table 1: - Medium Voltage Switchgear Product Line - Single Section - S_{DS} = 1.78 at z/h = 1.0								
MVSG-C	Electrical and Control	1	36	93	95	40	2350-2900	Interpolated
MVSG-1H	(1) 1200A to 3000A Breaker	1	36	93	95	40	2500-2900	Interpolated
MVSG-2H	(1) 1200A & (1) 1200A/2000A Breaker	1	36	93	95	40	2600-2900	Interpolated
MVSG-2H	(1) 1200A or 2000A Breaker with (2) PTs	1	36	93	95	40	2600-2900	Interpolated
MVSG-2H	(1) 1200A & (1) 2000A Breaker	1	36	93	95	40	2900	UUT_y-4
Table 2: - Medium Voltage Switchgear Product Line - Ganged Sections - S_{DS} = 1.78 at z/h = 1.0								
MVSG-C	Electrical and Control	1	36	93-96	95-102	50	2350	Interpolated
MVSG-1H	(1) 1200A to 3000A Breaker	1	36	93-96	95-102	47	2500	Interpolated
MVSG-C	Electrical and Control	1	36	93	95	45	2550	UUT_y-3b
MVSG-2H	(1) 1200A & (1) 1200A/2000A Breaker	1	36	93-96	95-102	45	2600	Interpolated
MVSG-2H	(1) 1200A or 2000A Breaker with (2) PTs	1	36	93-96	95-102	45	2600	Interpolated
MVSG-C	Electrical and Control	1	36	93-96	95-102	43	2750	Interpolated
MVSG-1H	(1) 1200A to 3000A Breaker	1	36	93-96	95-102	43	2750	Interpolated
MVSG-2H	(1) 1200A & (1) 1200A/2000A Breaker	1	36	93-96	95-102	42	2800	Interpolated
MVSG-2H	(1) 1200A or 2000A Breaker with (2) PTs	1	36	93-96	95-102	42	2800	Interpolated
MVSG-2H	(1) 1200A & (1) 2000A Breaker	1	36	93	95	40	2900	UUT_y-3c
MVSG-C	Electrical and Control	1	36	93-96	95-102	42	3000	Interpolated
MVSG-1H	(1) 1200A to 3000A Breaker	1	36	93-96	95-102	42	3000	Interpolated
MVSG-2H	(1) 1200A & (1) 3000A Breaker	1	36	96	102	42	3000	UUT_z-3a

General Notes:

All medium voltage switchgear are constructed of 11ga, Carbon Steel

¹⁾ _y and _z indicates the test report in which the units were qualified under: y - T45832 and z - T58426

²⁾ NEMA 3R design is an additional enclosure that fully houses a single or double section of the assembled medium voltage switchgear. Therefore the general dimensions and weights listed for the NEMA 3R is only the additional enclosure dimensions and weight. NEMA 3R enclosure has a lower seismic rating than the remaining switchgear arrangements.

RUSSELECTRIC INC. MEDIUM VOLTAGE SWITCHGEAR CERTIFIED PRODUCT LINE MATRIX



Identification	Cubicle Arrangement ³⁾	NEMA	Width (in)	Depth (in)	Height (in)	Max CG ⁴⁾ (in)	Weight (lbs)	Representative UUT ¹⁾
MVSG-2H	(1) 1200A & (1) 1200A/2000A Breaker	1	36	93-96	95-102	42	3000	Interpolated
MVSG-1H	(1) 3000A Breaker	1	36	93	95	36	3000	UUT_y-3a
MVSG-2H	(1) 1200A or 2000A Breaker with (2) PTs	1	36	93-96	95-102	42	3000	Interpolated
MVSG-C	Electrical and Control	1	36	96	102	48	3000	UUT_z-3b
²⁾ Table 2: - Medium Voltage NEMA 3R Enclosure - Ganged Sections - S_{DS} = 1.15 at z/h = 1.0								
MVSG-3R	Any cubical arrangement listed in Table 1	3R	80	101-104	102-138	48	3600-4870	Interpolated
MVSG-3R	Same cubical arrangements as UUT_z-3a/b	3R	80	104	138	48	4870	UUT_z-4a, 4b

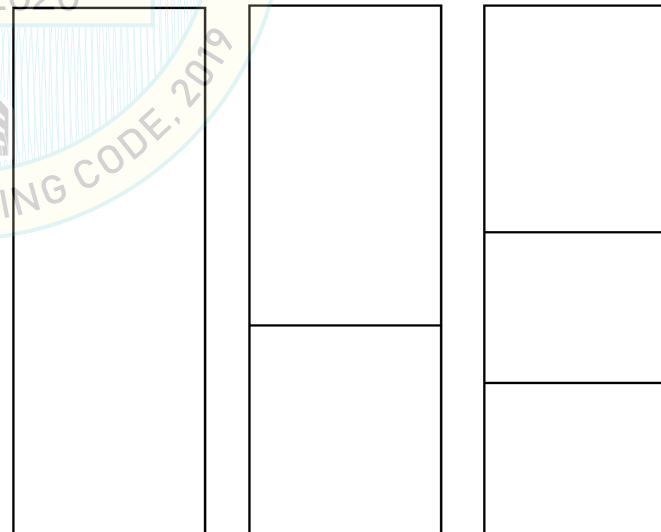
General Notes:

All medium voltage switchgear are constructed of 11ga, Carbon Steel

¹⁾ _y and _z indicates the test report in which the units were qualified under: y - T45832 and z - T58426

²⁾ NEMA 3R design is an additional enclosure that fully houses a single or double section of the assembled medium voltage switchgear. Therefore the general dimensions and weights listed for the NEMA 3R is only the additional enclosure dimensions and weight. NEMA 3R enclosure has a lower seismic rating than the remaining switchgear arrangements.

³⁾ MVSG-C, 1H, 2H configuration are identified the adjacent figure.



C

1H

2H

**RUSSELECTRIC INC. MEDIUM VOLTAGE SWITCHGEAR
CERTIFIED SUBCOMPONENT MATRIX**



ID/Catalog Number	Manufacturer	Description	Weight (lbs)	Representative UUT ¹⁾²⁾
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Table 3: Circuit Breakers & Cradle - $S_{DS} = 1.78$ at $z/h = 1.0$

VR-15100-12	Square D	VR Series 5 1200A	600	UUT _y -3c
VR-05025-12	Square D	VR Series 5 1200A	550	UUT _y -4
VR-05025-12 : VR-27040-20	Square D	VR Series 5 1200, 2000, 3000A	550-900	Interpolated
VR-15100-20	Square D	VR Series 5 2000A	700	UUT _y -3c
VR-05025-20	Square D	VR Series 5 2000A	650	UUT _y -4
VR-15100-30	Square D	VR Series 5 3000A	900	UUT _y -3a
50VCP-W350 1200A	Eaton / Cutler Hammer	VCP-W 1200A	350	UUT _z -3a
50VCP-W350 1200-3000A	Eaton / Cutler Hammer	VCP-W 1200-3000A	350-525	Interpolated
75VCP-W500 1200-3000A	Eaton / Cutler Hammer	VCP-W 1200-3000A	375-525	Interpolated
150VCP-W500 1200-3000A	Eaton / Cutler Hammer	VCP-W 1200-3000A	350-525	Interpolated
150VCP-W750 1200-3000A	Eaton / Cutler Hammer	VCP-W 1200-3000A	350-525	Interpolated
150VCP-W1000 1200-3000A	Eaton / Cutler Hammer	VCP-W 1200-3000A	460-550	Interpolated
150VCP-W1500 1200-3000A	Eaton / Cutler Hammer	VCP-W 1200-3000A	525-550	Interpolated
150VCP-W1000 300A	Eaton / Cutler Hammer	VCP-W 3000A	550	UUT _z -3a

Table 4: Potential Transformers - $S_{DS} = 1.78$ at $z/h = 1.0$

763X121031	GE	P.T., 2400-4800 Volt / 60kV	50	UUT _y -3b, UUT _z -3b
763X121001 to 463X121042	GE	P.T., 2400-4800 Volt / 60kV	50	Interpolated
764X120001 to 764X120024	GE	P.T., 4800-7200 Volt / 75kV	110	Interpolated
764X121030 to 765X121061	GE	P.T., 7200-11400 Volt / 110kV	110	Interpolated
765X121050	GE	P.T., 7200-14400 Volt / 110kV	110	UUT _y -3b, UUT _z -3b

Table 5: Display Lights & Flat Panel Displays - $S_{DS} = 1.78$ at $z/h = 1.0$

C-TPC1770H	Wonderware	LCD PC 17"	37	UUT _y -3b
304-191000	Strongarm	Display Panel 19.1"	43	UUT _y -2a

Table 6: Protective Relays & Other Protection System - $S_{DS} = 1.78$ at $z/h = 1.0$

SR 489	GE Mutilin	Generator Protection System	17	UUT _y -3b, 3c
BE1-47N	Baster	Relay	8	UUT _y -3b, 4, UUT _z -3a
750P5G5S6H1A	GE Mutilin	Relay	10	UUT _z -3a

Table 7: Current Transformer - $S_{DS} = 1.78$ at $z/h = 1.0$

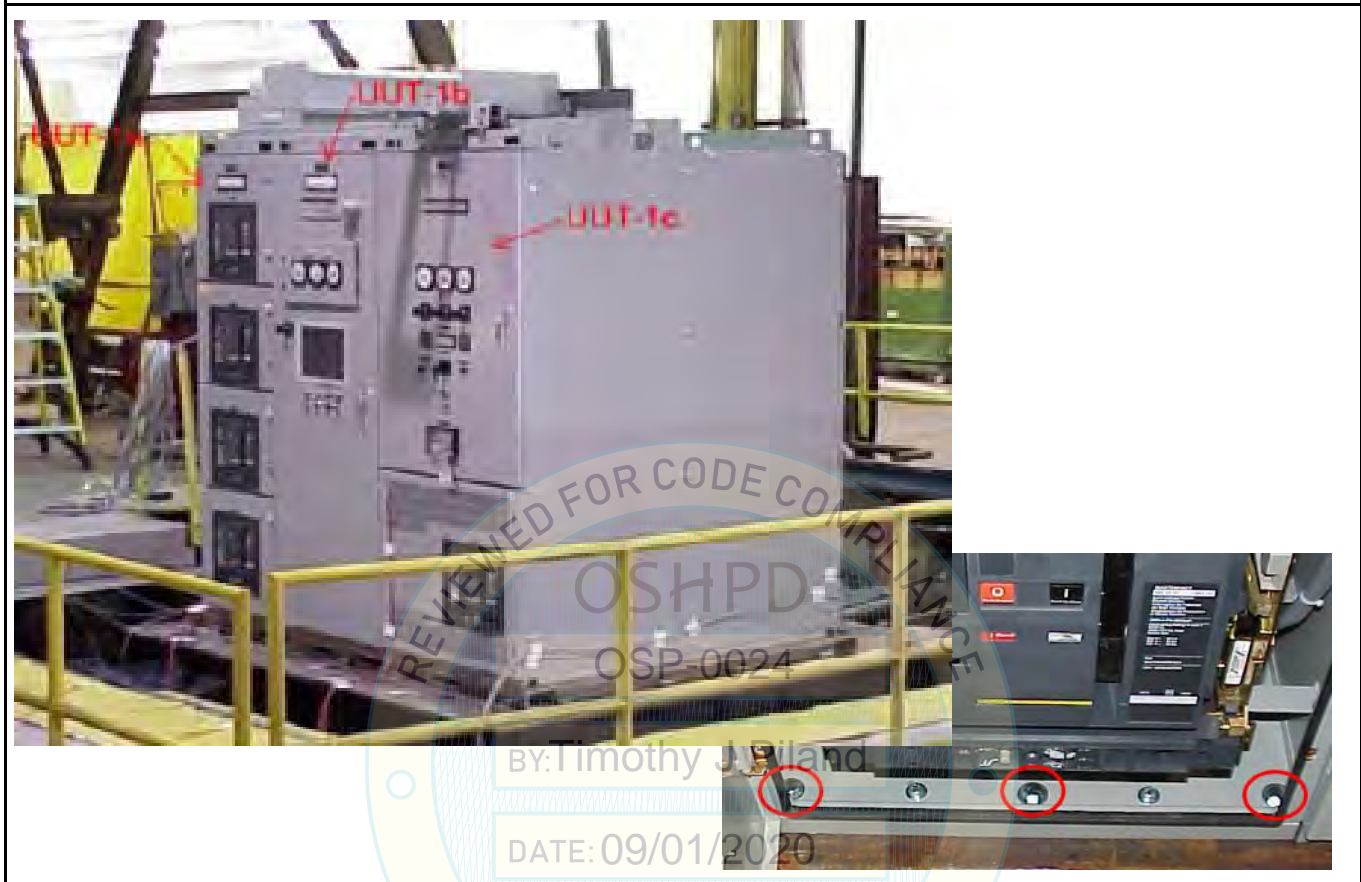
780-122	ITI	Current Transformer	50	UUT _y -4, UUT _z -3b
JKM-5C	GE	Current Transformer	25	UUT _z -3a

General Notes:

¹⁾ _y and _z indicates the test report in which the units were qualified under: _y - T45832 and _z - T58426

²⁾ UUT_z-4a,b utilized the same subcomponents as UUT_z-3a,b which achieved higher seismic level. Therefore the subcomponents are not listed for UUT_z-4a,b.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
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Product Line: Low Voltage Switchgear	Report Number: T53994
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Model Number: LVSG-4H	UUT No. in Test Report: 98007-1
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UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of three floor mounted NEMA type 1 enclosures consisting of (1) 4-High Low Voltage Switchgear sections.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, Square D Low Voltage Circuit Breakers & Cradle (NW20L1) and Current Transformers (120-202).

UUT PROPERTIES

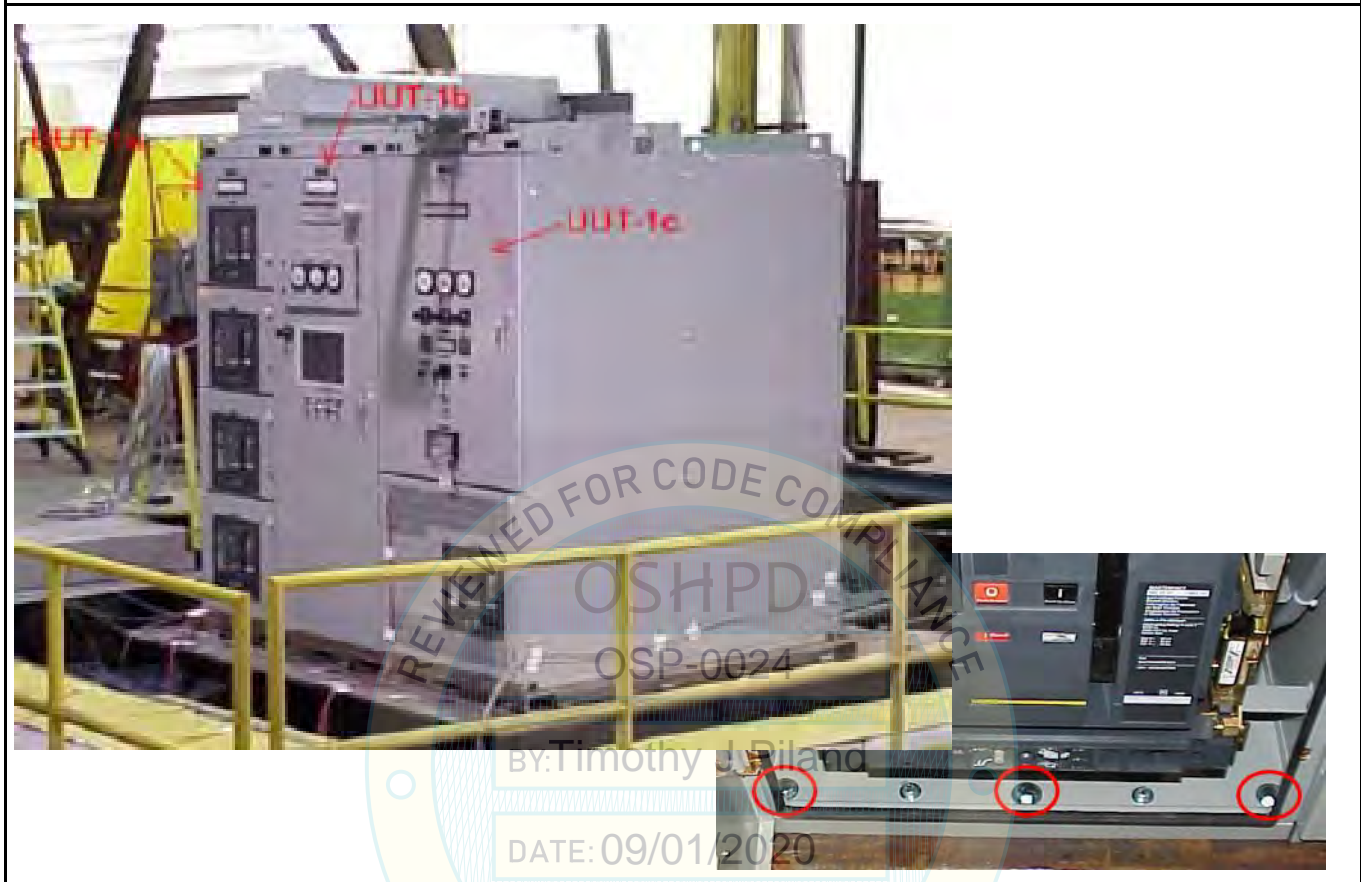
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,200	24.0	72.0	90.0	7.4	8.7	> 33

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	1.34g	0.54g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
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Product Line: Low Voltage Switchgear	Report Number: T53994
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Model Number: LSVG-C	UUT No. in Test Report: 98007-1
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UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of one floor mounted NEMA type 1 enclosures consisting of Control Low Voltage Switchgear sections.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure Flat Panel Displays (C-TPC1770H), Transformers (K100D1), and Protective Relays (SR489).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,500	30.0	72.0	90.0	7.4	8.7	> 33

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	1.34g	0.54g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
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Product Line: Low Voltage Switchgear	Report Number: T53994
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Model Number: LSVG-1H	UUT No. in Test Report: 98007-1
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UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of one floor mounted NEMA type 1 enclosures consisting of (1) 1-High Low Voltage Switchgear sections.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, Square D Low Voltage Circuit Breakers & Cradle (NW40H3), Current Transformers (140-402) and Transformer (K300D1).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,700	36.0	72.0	90.0	7.4	8.7	> 33

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	1.34g	0.54g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
Product Line: Low Voltage Switchgear	Report Number: T53994
Model Number: LSVG-C	UUT No. in Test Report: 98007-2
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.	
UUT Description: The unit is comprised of two floor mounted NEMA type 1 enclosures consisting of a Control Cubicle and (1) 0-High Low Voltage Switchgear sections.	
UUT Components: NEMA1 12ga Carbon Steel Enclosure, Flat Panel Displays (304-191000) and Controls.	

UUT PROPERTIES							
Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)			
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V	
950	30.0	28.0	90.0	7.3	7.4	> 33	
SEISMIC TEST PARAMETERS							
Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	1.34g	0.54g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
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Product Line: Low Voltage Switchgear	Report Number: T59065
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Model Number: LSVG-2H	UUT No. in Test Report: UUT-1
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UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of one floor mounted NEMA type 1 enclosures consisting of (1) 2-High Low Voltage Switchgear sections.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, Eaton Low Voltage Circuit Breakers & Cradel (MDS-C08, MDS-C32).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,900	24.0	78.0	98.0	11.5	8	31.5

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	4.00g	3.00g	1.68g	0.68g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
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Product Line: Low Voltage Switchgear	Report Number: T59065
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Model Number: LSVG-1H	UUT No. in Test Report: UUT-1
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UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources

UUT Description: The unit is comprised of two floor mounted NEMA type 1 enclosures consisting of (1) 1-High Low Voltage Switchgear sections.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, Eaton Low Voltage Circuit Breaker & Cradel (MDS-C50), Current Transformer (140-402), Flat Panel Displays (C-TPC1770H), and Transformers (K1000D1).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
3,200	44.0	78.0	98.0	11.5	8	31.5

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	4.00g	3.00g	1.68g	0.68g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT_x-2a

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



REVIEWED FOR CODE COMPLIANCE
OSHPD
OSP-0024
BY: Timothy J Piland
DATE: 09/01/2020

Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
Product Line: Low Voltage Switchgear	Report Number: T59065
Model Number: LSVG-3H	UUT No. in Test Report: UUT-2
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.	

UUT Description: The unit is comprised of two floor mounted NEMA type 1 enclosures consisting of (1) 3-High Low Voltage Switchgear sections.

UUT Components:
NEMA1 12ga Carbon Steel Enclosure, Eaton Low Voltage Circuit Breakers & Cradel (MDS-C08, MDS-C32) and Protective Relays (SR489).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,600	36.0	78.0	98.0	9.8	8.8	32.2

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	4.00g	3.00g	1.68g	0.68g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
Product Line: Low Voltage Switchgear	Report Number: T59065
Model Number: LSVG-1H	UUT No. in Test Report: UUT-2

UUT Function: Power Control System to monitor & transfer various electrical loads between multiple sources.

UUT Description: The unit is comprised of two floor mounted NEMA type 1 enclosures consisting of (1) 1-High Low Voltage Switchgear sections.

UUT Components:
 NEMA1 12ga Carbon Steel Enclosure, Eaton Low Voltage Circuit Breakers & Cradel (MDS-C08), Current Transformers (120-202), and Transformer (K300D1).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,650	26.0	78.0	98.0	9.8	8.8	32.2

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	4.00g	3.00g	1.68g	0.68g

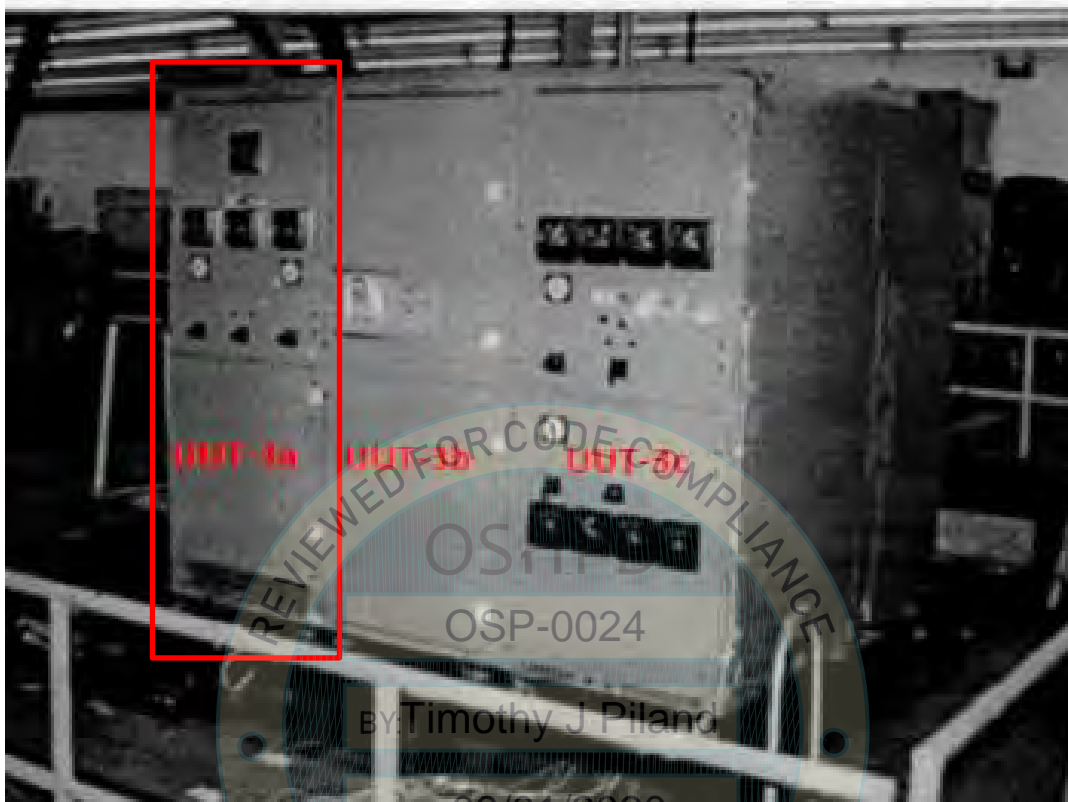
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT_y-3a

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section for a total of (18) bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
Product Line: Medium Voltage Switchgear Systems	Report Number: T45832
Model Number: MSVG-1H	UUT No. in Test Report: 6225768-Q-D1
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of floor mounted NEMA type 1 enclosure consisting of (1) 1-High Medium Voltage Switchgear section.	
UUT Components: NEMA1 12ga Carbon Steel Enclosure with a 3000A Square D Medium Voltage Circuit Breakers & Cradel (VR-15100-30).	

UUT PROPERTIES

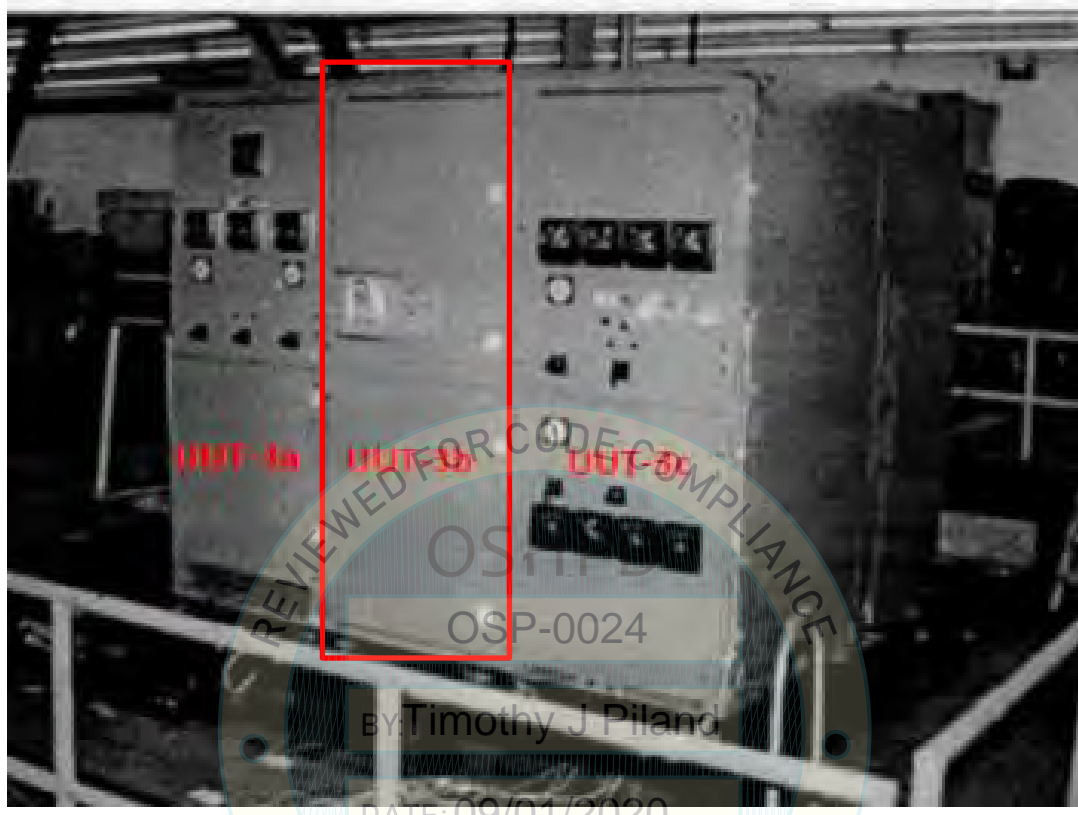
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
3,000	36.0	93.0	95.0	10.5	2.5	17.0

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.78	1.00	1.50	2.85g	2.14g	1.19g	0.48g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section for a total of (18) bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
Product Line: Medium Voltage Switchgear Systems	Report Number: T45832
Model Number: MSVG-C	UUT No. in Test Report: 6225768-Q-D1
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosure consisting of (1) Control Medium Voltage Switchgear section.	
UUT Components: NEMA1 12ga Carbon Steel Enclosure, with potential transformers (763X121031, 765X121050), LCD PC (C-TPC1770H), and protective relays (SR489, 750P5G5S6H1A)	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,550	36.0	93.0	95.0	10.5	2.5	17.0

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.78	1.00	1.50	2.85g	2.14g	1.19g	0.48g

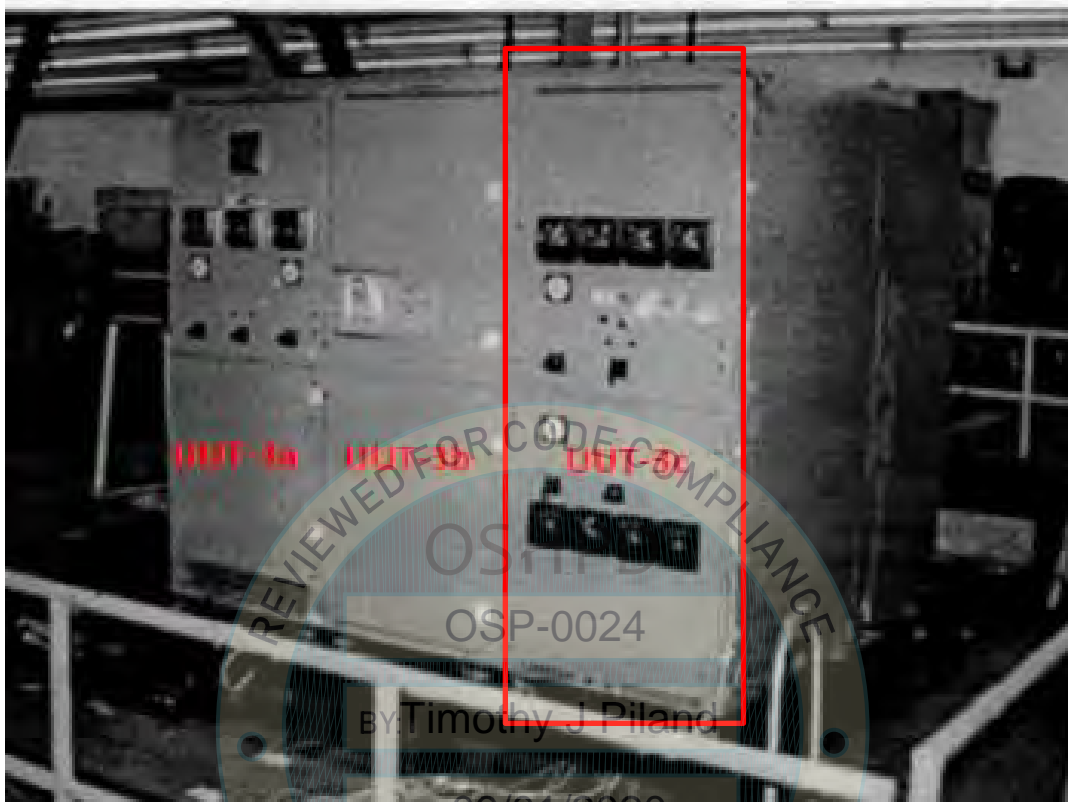
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT_y-3c

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Floor mounted with (6) 1/2" diameter grade 5 bolts per section for a total of (18) bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
Product Line: Medium Voltage Switchgear Systems	Report Number: T45832
Model Number: MSVG-2H	UUT No. in Test Report: 6225768-Q-D1
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosure consisting of (1) 2-High Medium Voltage Switchgear section.	
UUT Components: NEMA1 12ga Carbon Steel Enclosure with Square D Medium Voltage Circuit Breakers & Cradel (VR-15100-12, VR-15100-20) and protective stytem (SR489).	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,900	36.0	93.0	95.0	10.5	2.5	17.0

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.78	1.00	1.50	2.85g	2.14g	1.19g	0.48g

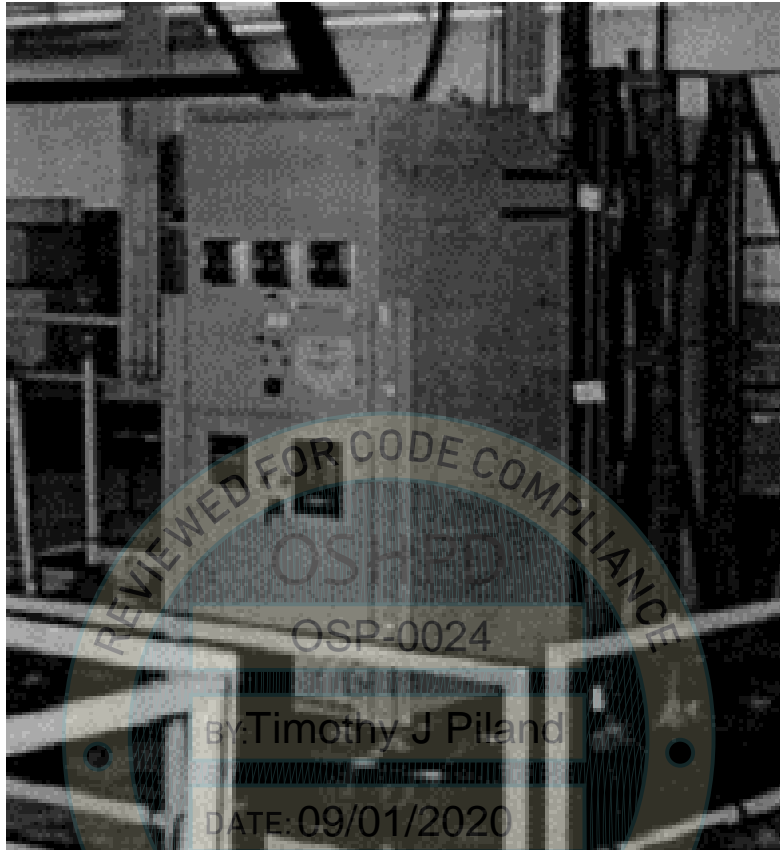
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT_y-4

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Floor mounted with (8) 1/2" diameter grade 5 bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc.
Product Line: Medium Voltage Switchgear Systems	Report Number: T45832
Model Number: MSVG-2H	UUT No. in Test Report: 6225768-Q-D2
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of a floor mounted NEMA type 1 enclosures consisting of (1) 2-High Medium Voltage Switchgear section.	
UUT Components: NEMA1 12ga Carbon Steel Enclosure with Square D Medium Voltage Circuit Breakers (VR-05025-12, VR-05025-20), Protective Relay (BE1-47N), and Current Transformer (780-122).	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,900	36.0	93.0	95.0	8.5	3.3	29.0

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.78	1.00	1.50	2.85g	2.14g	1.19g	0.48g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT_z-3a

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Floor mounted with (6) 5/8" diameter grade 5 bolts per section for a total of (12) bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
Product Line: Medium Voltage Switchgear Systems	Report Number: T58426
Model Number: MSVG-2H	UUT No. in Test Report: UUT-2 and 3
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of one floor mounted NEMA type 1 enclosure consisting of (1) 2-High Medium Voltage Switchgear sections.	

UUT Components:
NEMA1 11ga Carbon Steel Enclosure with Eaton Medium Voltage Circuit Breakers & Cradle (50VCP-W350, 150VCP-W1000), Protective Relays (BE1-47N, 750P5G5S6H1A), and Current Transformer (JKM-5C).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
3,000	36.0	96.0	102.0	9.9	5.8	14.0

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	1.34g	0.54g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (6) 5/8" diameter grade 5 bolts per section for a total of (12) bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
Product Line: Medium Voltage Switchgear Systems	Report Number: T58426
Model Number: MSVG-C	UUT No. in Test Report: UUT-2 and 3
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of two floor mounted NEMA type 1 enclosure consisting of (1) Control High Medium Voltage Switchgear section.	
UUT Components: NEMA1 11ga Carbon Steel Enclosure with Potential Transformers (763X121031, 765X121050), and Current Transformers (780-122).	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
3,000	36.0	96.0	102.0	9.9	5.8	14.0

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.00	1.00	1.50	3.20g	2.40g	1.34g	0.54g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT_z-4a

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Floor mounted with (8) 5/8" diameter grade 5 bolts per section for a total of (16) bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
Product Line: Medium Voltage Switchgear Systems	Report Number: T58426
Model Number: MSVG-2H; MSVG-3H	UUT No. in Test Report: UUT-4
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of three floor mounted NEMA type 3R enclosures consisting of (1) 3-High, and (1) 2-High Medium Voltage Switchgear sections.	

UUT Components:
NEMA3R 11ga Carbon Steel Enclosure with Eaton Medium Voltage Circuit Breakers & Cradle (50VCP W350, 150VCP-W1000), Protective Relays (BE1-47N, 750P5G5S6H1A), and Current Transformer (JKM-5C).

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
4,872	36.0	93.0	95.0	17.0	5.1	17.5

SEISMIC TEST PARAMETERS

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.15	1.00	1.50	1.84g	1.38g	0.77g	0.31g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Floor mounted with (8) 5/8" diameter grade 5 bolts per section for a total of (16) bolts.



Manufacturer: Russelectric, Inc.	Test Location: Wyle Laboratory, Inc
Product Line: Medium Voltage Switchgear Systems	Report Number: T58426
Model Number: MSVG-2H; MSVG-3H	UUT No. in Test Report: UUT-4
UUT Function: Power Control System to monitor & transfer various electrical loads between multiple	
UUT Description: The unit is comprised of three floor mounted NEMA type 3R enclosures consisting of (1) 3-High, and (1) 2-High Medium Voltage Switchgear sections.	
UUT Components: NEMA3R 11ga Carbon Steel Enclosure with Potential Transformers (763X121031, 765X121050), and Current Transformers (780-122).	

UUT PROPERTIES						
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
4,873	36.0	93.0	95.0	17.0	5.1	17.5

SEISMIC TEST PARAMETERS							
Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.15	1.00	1.50	1.84g	1.38g	0.77g	0.31g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.